

TUTORIAL 3

1. Consider the matrix $A = \begin{pmatrix} 3 & 7 \\ 4 & -5 \\ 0 & 1 \end{pmatrix}$.

- (a) How many rows does A have?
- (b) How many columns does A have?
- (c) What is the order of A ?
- (d) Find the matrix $-A$.
- (e) Find the transpose A^T of A .

2. Consider the matrix $B = \begin{pmatrix} 1 & -5 \\ 0 & 3 \end{pmatrix}$.

- (a) Find the determinant of B .
- (b) Is B a singular matrix? Give a reason for your answer.
- (c) Does B have an inverse B^{-1} ? If so, find it. If not, explain why not.

3. Consider the matrices $A = \begin{pmatrix} 2 \\ 3 \\ -1 \end{pmatrix}$, $B = \begin{pmatrix} 1 & -2 & 3 \\ 7 & 8 & -9 \end{pmatrix}$, $C = \begin{pmatrix} 6 & -4 & 5 \end{pmatrix}$ and $D =$

$$\begin{pmatrix} 1 & 6 \\ -3 & 5 \end{pmatrix}.$$

Which of the following exist? Where the matrix exists, find it.

- (a) $A + A$
- (b) $A - A$
- (c) $B - D$
- (d) AA
- (e) AB
- (f) AC
- (g) AD